page is captioned "<u>VERSION WITH MARKINGS TO SHOW CHANGES MADE</u>." Favorable reconsideration of the application as now amended is respectfully solicited.

Claims 1 through 8, 14 through 21, 28 and 30 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,894,362 (Onaka) as set forth in section 1 of the Office Action. Claims 9 through 11 and 22 through 24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of Kinoshita '366 of record. Claims 12 and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of Clapp of record (Office Action, section 3). Claims 13 and 27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of the Inoue publication (section 4 of the Office Action). At section 5 of the Office Action, claim 26 has been rejected as being unpatentable under 35 U.S.C. § 103(a) over Onaka. Claims 29 and 31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of the Becker publication.

Each of the rejections of record relies on Onaka as the primary prior art reference. The Office Action describes the gain equalization filter of Onaka as inherently functioning to adjust a gradient $dL/d\lambda$ in order to flatten an optical amplifier spectrum having a slope that may vary with pumping power and/or environmental conditions. However, it is submitted that Onaka does not disclose or suggest the optical filter of the presently claimed invention. Each of the independent claims has been amended to require, *inter alia*, language similar to the following:

> control means for controlling an optical pumping light output from said optical pumping light source and adjusting the gradient $dL/d\lambda$ of said optical filter in response to the gradient $dL/d\lambda$ change resulting from the optical amplification section(s) such that light output from said optical amplifier has a predetermined target wavelength characteristics of light power.

The optical filter of the present invention is not VOA or GEQ. In the present invention this optical filter is used for dynamically compensating the change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplification caused by the change of signal light level or numbers of signal light. The inherent wavelength-dependent gain of the optical amplifier is not compensated by this optical filter. In the present invention, the optical filter compensates only for the change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplifier section(s), not depending on inherent gain spectrum of the optical amplifier section(s), except for GEQ, which compensates inherent gain spectrum of the optical amplifier section(s).

As neither Becker nor any of the other references of record disclose or suggest this feature it is submitted that claims 1 through 31 are patentably distinct. Accordingly, allowance of the application is respectfully solicited. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend claims 1, 14, 29 and 31.

1. (Twice Amended) An optical amplifier for amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising:

one or a plurality of optical amplification sections each of which has an optical waveguide doped with a fluorescent material and amplifies the multiplexed signal light by optical pumping of the fluorescent material;

an optical pumping light source for supplying predetermined optical pumping light to said optical amplification section;

an optical filter capable of changing a gradient dL/dλ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band <u>to compensate a gradient dL/dλ change resulting from the optical amplification section(s)</u>; and

control means for controlling an optical pumping light output from said optical pumping light source [such that light power after amplification has a predetermined target value,] and [for] adjusting the gradient dL/dλ of said optical filter <u>in response to the gradient dL/dλ change resulting from the optical amplification section(s) such that light output from said optical amplifier has a predetermined target wavelength characteristics of light power</u>.

14. (Twice Amended) An optical amplification method of amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising the steps of:

guiding the multiplexed signal light to an optical waveguide doped with a fluorescent material together with predetermined optical pumping light and optically amplifying the multiplexed signal light;

guiding at least one of the multiplexed signal light before amplification and that after amplification to an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band and adjusting the gradient $dL/d\lambda$ of the optical filter to compensate [reduce an inherent] change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplification; and

adjusting an intensity of the optical pumping light to adjust light power after amplification [to] such that light output has a predetermined target [value] wavelength characteristics of light power.

29. (Amended) An optical amplifier for amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising:

one or a plurality of optical amplification sections each of which has an optical waveguide doped with a fluorescent material and amplifies the multiplexed signal light by optical pumping of the fluorescent material;

an optical pumping light source for supplying predetermined optical pumping light to said optical amplification section;

an optical filter capable of changing a gradient dL/dλ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band to compensate a gradient dL/dλ change resulting from the optical amplification section(s);

a gain equalizer for compensating for an inherent wavelength-dependent gain of said optical amplification section; and

control means for controlling an optical pumping light output from said optical pumping light source [such that light power after amplification has a predetermined target value] and [for] adjusting the gradient dL/dλ of said optical filter in response to a gradient dL/dλ change resulting from said optical amplification section(s) such that light output from said optical amplifier has a predetermined target wavelength characteristics of light power[; and

a gain equalizer for compensating for an inherent wavelength dependent gain of said optical amplification section].

31. (Amended) An optical amplification method of amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising the steps of:

guiding the multiplexed signal light to an optical waveguide doped with a fluorescent material together with predetermined optical pumping light and optically amplifying the multiplexed signal light;

guiding at least one of the multiplexed signal light before amplification and that after amplification to an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band and adjusting the gradient $dL/d\lambda$ of the optical filter to compensate [reduce an inherent] change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplification;

reducing an inherent wavelength-dependent gain in the optical amplification using a predetermined gain equalizer; and

adjusting an intensity of the optical pumping light to adjust light power after amplification [to] such that light output obtained by said optical amplification method has a predetermined target [value] wavelength characteristics of light power.